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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/322,321	05/28/1999	TONIA MORRIS	042390.P6888	7825

7590 11/17/2005

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EXAMINER	
AGGARWAL, YOGESH K	
ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/322,321	MORRIS ET AL.	
	Examiner	Art Unit	
	Yogesh K. Aggarwal	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 23-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 23-32 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/15/2005 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 23-32 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 23-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum (US Patent # 6,847,398), Fossum et al. (US Patent # 20030193597), Suzuki (USPN 4,709,259) and in further view of Davis (US Patent # 5,541,645).

[Claim 23]

Fossum '398 discloses an integrated circuit comprising:

a pixel array (Fig. 1, APS array 100);

a first reset shift register having a plurality of outputs, each output being coupled to control a reset of sensor elements that are in a respective one of the rows of the array (figure 1a,

shutter A 150, col. 2 lines 40-47, Also shown in figure 21 a special latched addressing element, a row decoder control logic providing control signals 2104 and figure 22 shows a latch 2212 which acts like a register for each row);

a second reset shift register having a plurality of outputs, each output being coupled to control a reset of sensor elements of a respective one of the rows of the array (figure 1a, shutter B 152, col. 2 lines 40-47, Also shown in figure 21 a special latched addressing element, a row decoder control logic providing control signals 2104 and figure 22 shows a latch 2212 which acts like a register for each row);

a wordline shift register having a plurality of outputs, each output being coupled to control a readout of all of the sensor elements that are in a respective one of the rows of the array (figure 1a, shows a read ptr used to access various rows of the array or as shown in figures 21 and 22, a special latched addressing element outputting sel to select);

control logic (160 in figure 1 or row decoder logic 2102 in figure 21)coupled to feed (a) the first shift register with a reset bit and (b) the wordline shift register with a read bit, and to operate the reset and wordline shift registers so that the reset bit and the read bit shift through their respective registers while an image frame is being captured, with the reset bit always being one or more rows ahead of the read bit to mark the start of integration, wherein the control logic is to program the reset bit and the read bit to set the integration time independently for different lines (col. 2 line 56-col. 3 line 24, figures 2-4 clearly show reset bit ahead of read bit by more than one row, col. 5 lines 10-20 teach that different exposure times can be set for the same image i.e. independently for different parts of the sensor).

Fossum '398 does not disclose that the reset bit is used for generating a correlated double sampling (CDS) reset value. It is extremely well known in the art to use the reset bit in order to generate a CDS reset value as taught by Fossum et al. Fossum et al., herein Fossum '597, discloses sampling a reset voltage at the end of integration in order to reduce various noise introduced into the signals (paragraphs 0028, 0029, and 0033).

Neither Fossum '398 nor Fossum '597 disclose a color sensor array having a plurality of sensor elements of different first and second colors, arranged in rows and columns, wherein the first reset shift register is used to control the integration time of the first color and a second reset shift register is used to control the integration time of the second color.

Suzuki discloses a color image sensor wherein the integration time for each color is adjustable so as to increase the dynamic range of the sensor (column 2, lines 17-21). This is accomplished by having separate registers for each color so as to reset all of the colors at the same time to start the integration period and to read out the colors at their respective integration times as depicted in Fig. 3 (e.g., column 4, lines 6-41; column 5, line 27 – column 6, line 16); Figs. 1-3). Therefore it would have been obvious to have had the integration time for each color is adjustable so as to increase the dynamic range of the sensor. As such, for at least the red and green colors two reset bits would be needed, one to mark the start of integration as taught by both Fossum '597 and Suzuki and the other to perform CDS at the end of the integration period as taught by Fossum '597.

Examiner notes that Suzuki discloses to set the integration time for each color independently by using the second reset bit. Examiner asserts that utilizing the second reset bit to vary the integration time as disclosed by Suzuki in Fig. 3 is functionally equivalent to utilizing

the first reset bit to vary the integration time wherein it is well within the level of one skilled in the art at the time of the invention to have selected any of these functional equivalents. Evidence of this functional equivalence is found in the previously relied upon USPN 5,541,645 to Davis in Fig. 4C. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have varied the integration time of the colors with the first reset bit instead of the second reset bit since they are functional equivalents of each other and it is well within the level of one skilled in the art to select either of the equivalent methods for varying the integration time of the different colors. As such, given the teaching as a whole of the Suzuki reference of utilizing separate control logic for each color channel while utilizing the functional equivalent method of varying the integration time of each of the colors disclosed by Davis one skilled in the art would recognize to utilize a reset shift register of Fossum '597 for each of the colors. Examiner notes that three reset shift registers would be utilized since the reset of each color is performed independently, as opposed to the reading out of each color being performed independently as in Suzuki, and all of the colors are read out simultaneously such that the one wordline shift register of Fossum is sufficient and controls the readout of all of the sensor elements in a respective row.

In regards to claim 24 see Fig. 1 of Suzuki.

In regards to claim 24 see Fig. 1 of Suzuki.

In regards to claim 25 see examines notes on the above rejections. Note that the combined teaching of Fossum '398, Suzuki, and Davis teach to have a reset shift register for each color. Note further that Suzuki discloses using the Bayer color filter wherein all three colors are present on any one given line. As such, one of ordinary skill in the art would

recognize that three reset metal lines would be used for each row. As such there are two reset metal lines for each row.

In regards to claim 26 see Examiners notes on the rejections above. Examiner notes that it is known in the art that in conventional lighting the blue color typically has the lowest intensity thus has the longest integration time. Davis discloses that since this is the case, in order to have a time efficient image sensor, and minimize dead time one would only want to reset the blue color once (e.g., column 5, line 26 – column 6, line 7). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have only had one reset for the blue reset register, or third reset register, in order to minimize dead time and thus have a time efficient image sensor.

In regards to claim 27 see examines notes on the above rejections.

In regards to claim 28 see examines notes on the above rejections.

In regards to claim 29 see examines notes on the above rejections. Note that the combined teaching of Fossum '398, Suzuki, and Davis teach to have a reset shift register for each color. Note further that Suzuki discloses using the Bayer color filter wherein all three colors are present on any one given line. As such, one of ordinary skill in the art would recognize that three reset metal lines would be used for each row. As such there are two reset metal lines for each row.

In regards to claims 30-32 see Examiners notes on the rejections above.

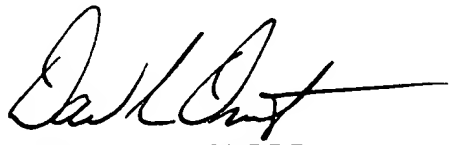
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)-272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YKA
November 13, 2005



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